

DETERGENTS AND PRACTICES USED IN HOME LAUNDERING
IN SELECTED COMMUNITIES IN KANSAS

by

RUTH ELEMINA HAMILTON

A. B., Greenville College, Illinois, 1923

A THESIS

submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE

Department of Clothing and Textiles

KANSAS STATE COLLEGE
OF AGRICULTURE AND APPLIED SCIENCE

1945

TABLE OF CONTENTS

INTRODUCTION	1
REVIEW OF LITERATURE	2
METHOD OF PROCEDURE	7
FINDINGS AND DISCUSSION	8
Distribution of Age Groups and Occupations of Families	8
Extent of Laundry Done in the Home	11
Water Supply	11
Accessory Processes and Materials	13
Means Used to Wash Clothes at Home	16
Soaking of Clothes	18
Length of Time of Sudsing	18
Boiling of Clothes	22
Temperature of Water for Sudsing and Rinsing	23
Drying of Clothes	26
Soaps Used	27
Form of Soaps Used	29
Reasons for Preferences	30
Comparison of Findings with Other Studies	32
SUMMARY	34
ACKNOWLEDGMENT	38
REFERENCES	39
APPENDIX	40

INTRODUCTION

The height to which a nation has risen in the scale of civilization is sometimes measured by its standards of consumption. These standards are thought to influence decisions in regard to values sought and sacrifices made as well as to determine the satisfactions gained through the choices made. Hoyt (2) pointed out that even though the effects of material progress are not always good, still material progress is a necessary basis upon which all other progress rests.

A consideration of consumption and standards of living should not be made without recognizing that all the factors of consumption work together. Hoyt divided the world into seven cultural groups. The Western or technological culture, of which our nation is a part, comprises one-third of the world's population and consumes by far the greatest measure of goods and measurable services.

In a comparison of world consumption some goods are of relative significance; e. g., clothing consumption is influenced by climatic conditions. Other items, such as sugar and soap, have significance in and by themselves as a measure of cultural progress. Of these, soap is considered to be of especial significance and interest. The United States heads the list of the nations of the Western culture in the use of this commodity with an estimated annual per capita consumption of 25 pounds; Canada and northern Europe follow closely. By comparison the world average is 6.6 pounds per person. However, other than the amount

used in our country, little information is available on the cleansing agents or detergents used.

Soap is the best known detergent; others in use today are water, some alkalies and certain synthetic compounds. Alkalies possess a degree of detergency but also have deteriorating effects upon certain fibers. Because of the varying amounts of alkali contained in soaps, its presence presents a problem in the laundering of fabrics (3).

The general procedure in the manufacture of soap is essentially the same today as when soap was first made over 2000 years ago. It is probable that its making was incidental to religious rites performed at the sacrificial altar. There the tallow of the slain animal may have dripped on to the wood ashes and needed only the addition of water to complete the crude transformation into soap (3). In our country, the huge soap kettle has been a necessary part of the household equipment from the founding of the colonies even to the present time in certain sections.

Only a little over 100 years ago Chevreul discovered what soap was and scientists are still searching for further knowledge of the how of its action. Though known to the Romans as "Pliny's paste" or "Pompeian plaster" and esteemed because of its aid in the healing of skin diseases, its use was limited to persons of high degree. During the Dark Ages it was little used in the household. Soap appeared in England as a luxury during the fourteenth or fifteenth centuries. Since the eighteenth century, it has been universally recognized by civilized nations as the best detergent known (3).

Although water itself has a slight detergent action, when soap is added this action is greatly increased. For years the cleansing action of soap was explained on a chemical basis; i. e., it emulsified grease and neutralized acid dirt, but more recently a physical explanation has been advanced which, in addition to the chemical explanation, seems to throw light on the process (3). Schwarcz (5) explained the process thus:

It is generally conceded that soap cleans on account of its ability to increase the wetting power of water. It lowers the surface tension and allows the solution to wet and penetrate. In addition it emulsifies oil and grease, thereby rendering them miscible with water. Its action displaces soil... so that it may be separated... It surrounds broken up particles with a film to prevent redistribution and due to the colloidal nature of soap, holds them in suspension until rinsed off.

Some claim that soap increases the Brownian movement of the minute particles of dirt, thereby assisting in their removal. In addition, the solvent powers of soap are probably enhanced due to the hydrolysis of soap when it is dissolved in water, as even mild alkalinity is effective against soil.

Soap is still considered the best detergent in soft water, but when waters possess varying degrees of hardness an insoluble curd is formed which lessens the detergent action of soap and settles in the interstices of the fibers, giving a greyed appearance to the fabric (10).

Recently many new detergents, consisting of salts of alcohol sulfates and sulfonated hydrocarbons and their salts, have come into the market. These are neutral and therefore work well in all water (6). Trisodium phosphate, a mild alkali, also possesses some detergent action. It has been marketed under a variety of appealing names, but its greatest value is that it is an inexpensive and good water softener (3).

Almost collaterally with the development of new detergents, chemistry has given us synthetic fibers and new finishes which make possible many variations in the composition and texture of fabrics. These fabrics, along with certain fabrics of natural fibers to which we have been accustomed, demand special care in laundering in order that they may give satisfaction in wear.

In order to be better informed on the serviceability of fabrics as affected by laundering, it became necessary to find out what detergents were used and what practices were followed in laundering. It is especially important to find out what is done in the home laundry situation since claims are made that approximately 80 per cent of the laundry is still done in the home.

Certain laundry practices may be recommended by the manufacturer in order to insure the best service from a particular garment, but not until the processes actually followed are known can a situation be set up in which it is possible to measure objectively the effect of certain soaps on the serviceability of the fabrics in garments.

This study was undertaken to find out some of the practices used in home laundering, to ascertain the preferences of Kansas women for detergents used in the home laundry, and to learn, if possible, why these preferences exist.

REVIEW OF LITERATURE

No studies have been reported that relate directly to the choice of detergents in Kansas. However, several recent studies were found which treat of the use of detergents in two states.

The Nutritional Council of Chicago made a survey of 67 Chicago families (4). Records were kept of the amount and cost of laundry and toilet soap used for one month during the summer of 1934. Fifteen nationalities were represented in the group studied; 67 per cent of the families were on relief. The size of the families ranged from one to 11 persons; one-fourth of them had no built-in tubs; all except four did their own laundry. An average of 2.5 pounds of toilet and laundry soap was used per person during this period. The range was 0.8 pound to 6.8 pounds per person.

On an annual basis this would mean 29 pounds of soap per person or 37 pounds of soap and cleaning powders, compared with a national average of 25 pounds per person as estimated by the Department of Commerce (4). The cost of the soap was 32 cents per person per month and for soap and cleaning powders 41 cents per person per month.

A survey, made by the "Michigan Farmer", was reported in Soap and Sanitary Chemicals in 1939 (7). Questionnaires were sent to 2000 farm families near Milwaukee. A 17.6 per cent return indicated that 137 persons preferred bar soap, 116 preferred flake, 91 preferred both bar and flake, and two made their own soap.

Reporting on the bar soap used, 130 preferred Fels Naphtha, 83, P and G, and 69, Ivory. Altogether 22 different brands were named. For flake soap, 79 preferred Oxydol, 64, Rinso, 34, Ivory and 24, Lux. In all, 29 different brands of flake soap were given.

The average amount of laundry soap per family per month was 5.8 bars and 2.6 boxes of flake soap. Besides laundry soap this survey included toilet soaps, scouring powders, and others which are not relevant to the present inquiry.

The Milwaukee Journal made a study in 1940 dealing with the consumer buying trends in Greater Milwaukee, which was reported in Soap and Sanitary Chemicals (8). As to laundry soap, the survey showed that white soap had increased in popularity 11.1 per cent between 1938 and 1940. Brown soap, used by 63 per cent during the period from 1935 to 1938, dropped to 58.4 per cent in 1940. There was a gain in the use of granulated soap so that in 1940, 78.7 per cent of the families surveyed were buying soap granules or beads regularly. The increase in the use of packaged soap flakes was from 76 per cent in 1939 to 79.4 per cent in 1940. Lux flakes led the list with a percentage of 33.7; John Hanser, Chipso and Ivory were the next three in order according to the percentage of users. For the granulated soaps the ranks in descending order were Rinso, Oxydol, Supersuds, Duz, Ivory Snow, Dreft, and Vel. In these reports no distinction was made between granulated soaps and the synthetic detergents.

METHOD OF PROCEDURE

Check lists were prepared dealing with the choice of cleansing agents used and practices followed in home laundering. After a preliminary test of the check sheet, revisions were made. A copy of the revised list appears in the appendix.

One hundred rural and 100 urban women cooperated in the study. Qualified persons assisted in presenting the check sheets to groups of women in localities away from Manhattan. The communities which participated in checking these are located in the following Kansas counties: Douglas, Jewell, Marion, Morris, Ottawa, and Riley. This provided situations in which the water used differed in hardness. There was no attempt to obtain a homogeneity of professions or occupations, so that the results of this study should be representative of these communities.

FINDINGS AND DISCUSSION

Distribution of Age Groups and Occupations of Families

The lists checked by the 200 women were divided into five categories: rural, village under 325, 325 - 2499, 2500 - 9999, and 10,000 and over. Table 1 shows the number of people included in the households in each category with the age range for each group. Altogether 666 persons were represented, 466 or about 70 percent were 18 years of age or over. The reports from the villages, in the second category, were grouped with the reports from the rural women because it was thought that the source and amount of water used for laundry would be similar to that of a rural family since each household had its individual water supply.

Distribution according to occupation of those gainfully employed in the families of the 200 women reporting is given in Table 2. Altogether there were 245 employed. This number does not include the homemaker unless she was employed outside of the home for wages. It does, however, include persons younger than 18 years of age who have been regularly employed. Approximately 50 per cent of those gainfully employed lived in the country and village as did half or 100 of the women who filled out the questionnaires. Of the occupations represented approximately 32 percent were farmers, 19 professional, 14 office workers, and 13 laborers, with business men, mechanics and the armed forces constituting the remainder of those gainfully employed.

Table 1. Distribution of age groups in the 200 rural and urban families in Kansas who reported on laundering practices.

Age group years	Population groups											
	Total		Rural						Urban			
			Country		Village under 325		325-2499		2500-9999		10,000 & over	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
5 or less	79	11.8	35	5.2	11	1.6	9	1.3	0	0.0	24	3.6
6 - 12	61	9.1	30	4.5	7	1.0	7	1.0	2	0.3	15	2.2
13 - 17	60	9.0	25	3.7	8	1.2	10	1.5	1	0.1	16	2.4
18 and over	466	69.9	178	26.7	59	8.8	85	12.7	10	1.5	134	20.1
Total	666	99.8	268	40.2	85	12.7	111	16.6	13	1.9	189	28.3

Table 2. Distribution according to occupation of those gainfully employed in the 200 rural and urban families reporting on laundry practices.

Occupation	Population groups											
	Total		Rural				Urban					
			Country		Village		325-2499		2500-9999		10,000 & over	
					under 325							
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Farmer	78	31.8	67	27.3	5	2.0	5	2.0	0	0.0	1	.4
Mechanic	19	7.7	10	4.0	2	0.8	3	1.2	0	0.0	4	1.6
Office	34	13.8	3	1.2	3	1.2	3	1.2	0	0.0	25	10.2
Professional	47	19.1	9	3.6	2	.8	16	6.5	4	1.6	16	6.5
Laborer	33	13.4	3	1.2	11	4.4	7	2.8	0	0.0	12	4.8
U.S. Forces	10	4.0	0	0.0	0	0.0	1	.4	0	0.0	9	3.6
Merchandiser	24	9.7	0	0.0	6	2.4	6	2.4	0	0.0	12	4.8
Total	245	99.5	92	37.3	29	11.6	41	16.5	4	1.6	79	31.9

Extent of Laundry Done in the Home

An examination of the data on the extent to which laundry was done in the home showed that of the 200 families 91.5 percent did all of their laundry at home; 49.5 percent were rural women. Seventeen persons, or 8.5 percent reported that part of the laundry was done in the home. Only one of these was in the rural group. Washing machines were used by 184 families or 92 percent.

Water Supply

Since the ease with which washing may be done seems dependent upon the amount of available water, along with other factors, it seemed interesting to note the source and hardness of water supply (Table 3). City water was used for washing by 45.5 percent of the women, whereas 54.5 percent made use of individual wells or cisterns. In some instances it was reported that cistern water was used for washing even though the city water was used for other purposes. City water was checked as being used by one rural woman. It could be that she lived near enough to a town to have had city water and yet have classified herself as rural. Water was reported as piped into the house in 57 percent of the rural homes as against 90 percent of the urban homes. The number of rural homes thus supplied shows a trend toward modernizing the rural and small town home. Those without water piped into the house were 53 or 26 percent, 43 of whom were in the country. There were 103 or about 52 percent

Table 3. Data on source and hardness of water used for laundry by 200 selected households in rural and urban sections of Kansas.

Item	Population groups											
	Total		Rural						Urban			
			Country		Village		325-2499		2500-9999		10,000 & over	
			under 325									
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Source of water supply												
City water used												
Yes	91	45.5	1	0.5	0	0.0	27	13.5	4	2.0	59	29.5
No	109	54.5	71	35.5	28	14.0	8	4.0	0	0.0	2	1.0
Piped into house												
Yes	147	73.5	49	24.5	8	4.0	27	13.5	4	2.0	59	29.5
No	53	26.5	23	11.5	20	10.0	8	4.0	0	0.0	2	1.0
Quality of water used												
Hardness of water												
Soft	103	51.5	39	19.5	16	8.0	18	9.0	3	1.5	27	13.5
Medium	51	25.5	16	8.0	4	2.0	5	2.5	1	.5	25	12.5
Hard	46	23.0	17	8.5	8	4.0	12	6.0	0	0.0	9	4.5

who checked the use of soft water for washing. Of these, 48 or 24 percent were urban and 55 or 27.5 percent were rural. If to these percentages, 24 and 27.5 are added those reporting the use of medium soft water, 15.5 and 10 percent, respectively, there would be 77 percent of the homes using medium soft or soft water. In the country 12.5 percent used hard water as against 10.5 percent for the urban women. Nine percent of all the women checked the use of an individual softening system in their homes; most of these were in the two largest towns from which the questionnaires came, viz., Lawrence and Manhattan.

Accessory Processes and Materials

From Table 4 it may be noted that most of the water softener was used by rural women. Fifty-five percent of this group used water softener regularly or sometimes as against 33 percent of the urban women; whereas 45 rural women and 52 urban women reported medium and hard water in which presumably water softener might be used profitably. Seventeen different softeners were named; the three reported most often and in order of importance were climalene, lye, and borax.

Of the 88 women who used water softener regularly or sometimes, one strained, 38 skimmed, and two poured off the water before using. Forty-seven of those reporting apparently used the softener in the suds without attempting to remove any precipitate from the hard water.

Table 4. Some processes and materials accessory to laundering checked by the 200 Kansas women living in rural and urban areas.

Processes and materials	Population groups											
	Total		Rural				Urban					
			Country		Village		325-2499		2500-9999		10,000 & over	
					under 325							
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Use water softener												
Regularly	57	28.5	25	12.5	9	4.5	13	6.5	1	.5	9	4.5
Sometimes	31	15.5	5	2.5	16	8.0	0	0.0	0	.0	10	.5
Never	112	56.0	42	21.0	3	1.5	22	11.0	3	1.5	42	21.0
Softeners most often reported												
Climalene	21	10.5	12	6.0	1	.5	3	1.5	0	0.0	5	2.5
Lye	16	8.0	10	5.0	5	2.5	1	.5	0	0.0	0	0.0
Borax	10	5.0	4	2.0	0	0.0	3	1.5	1	.5	2	1.0
Method of disposal of precipitate												
Strain	1	.5	1	.5	0	0.0	0	0.0	0	0.0	0	0.0
Skim	38	19.0	21	10.5	8	4.0	6	3.0	0	0.0	3	1.5
Pour off water	2	1.0	2	1.0	0	0.0	0	0.0	0	0.0	0	0.0
Did not dispose of	47	23.5	6	3.0	17	8.5	7	3.5	1	0.5	16	8.0
Use of bleach												
Regularly	85	42.5	33	16.5	14	7.0	7	3.5	0	0.0	31	15.5
Sometimes	38	19.0	15	7.5	9	4.5	8	4.0	0	0.0	6	3.0
Never	77	38.5	24	12.0	5	2.5	20	10.0	4	2.0	24	12.0
Bleaches most often reported												
Clorox	70	35.0	28	14.0	9	4.5	10	5.0	0	0.0	23	11.5
Purex	36	18.0	10	5.0	11	5.5	5	2.5	0	0.0	10	5.0
Method of wringing												
Hand	20	10.0	2	1.0	1	.5	2	1.0	0	0.0	15	7.5
Roller	183	91.5	72	36.0	27	13.5	34	17.0	3	1.5	47	23.5
Spinner	3	1.5	0	0.0	0	0.0	0	0.0	1	.5	2	1.0
Number of rinses												
One	14	7.0	5	2.5	5	2.5	2	1.0	0	0.0	2	1.0
Two	161	80.5	60	30.0	21	10.5	33	16.5	2	1.0	45	22.5
Three	25	12.5	7	3.5	2	1.0	0	0.0	2	1.0	14	7.0
Change of rinse water												
Regularly	83	41.5	28	14.0	10	5.0	9	4.5	2	1.0	34	17.0
Sometimes	39	19.5	19	9.5	7	3.5	7	3.5	1	.5	5	2.5
Never	78	39.0	25	12.5	11	5.5	19	9.5	1	.5	22	11.0

Forty-seven rural women used a bleach regularly and 24 sometimes compared to 38 urban women who bleached regularly and 14 sometimes (Table 4). Seven different bleaches were named; the two most often reported were Clorox 70 times and Purex 36 times.

Roller wringing predominated with 181 or 90.5 percent of the 200 women checking it. Twenty women or 10 percent used hand wringing and 3 or 1.5 percent had spinner type machines. Some of those reporting checked both hand and roller wringer. Newer articles or fine clothes were sometimes done by hand (Table 4).

Two was the popular number of times the clothes were rinsed constituting 80.5 percent of the reports made. Fourteen or seven percent rinsed once, and 25 or 12.5 percent rinsed three times. Ten of the single rinses and only nine of those that rinsed three times were checked by rural women. The amount of water available or the difficulty of carrying it in might account for this. However, 38 rural women said that they changed rinse water regularly in contrast to 45 urban women, and 26 rural women claimed that they changed rinse water sometimes as against 13 urban women. This makes a total of 64 rural and 58 urban women who change rinse water regularly and sometimes.

Means Used to Wash Clothes at Home

Table 5 shows the means used to suds the various classes of clothes. The pattern is similar in each of the different groups so that the total picture is representative of all the women reporting. Some women did not wash certain classes of clothes, and others washed certain classes more than one way; e.g. many commented that when their rayons and colored prints were new they washed them by hand and when the articles were older they used the machine. The percentages as given in the total column in Table 5 were determined from the total number of times each class of laundry was washed rather than from the 200 women. The percentages washed by machine were highest on bed linens, bath towels, tea towels, overalls, hand towels, white clothes, table linens and cotton underwear. The range here was from 96.8 to 91.4 percent. The number of times rayon underwear was washed by hand was 72.7 percent of the total times reported, and by machine, 25.4 percent. Colored prints and gingham were washed by hand 26.9 percent of the times reported and 71.3 percent by machine. Hosiery was washed by hand 82.3 percent and 15.8 percent by machine; woolens 72.1 percent by hand and 24.3 percent by machine. The washing of corsets was almost evenly divided between hand and machine. Few persons used a washboard or hand vacuum for the sudsing of any clothing. The greatest number of times either of these was used was four. The passing of the use of the washboard to the nearly universal use of the washing machine makes for easier handling of clothes

Table 5. Means used to suds the various classes of laundry as reported by 200 Kansas women living in rural and urban sections.

Classes	Total												Population groups																
													Rural						Urban										
													Village under 325				325-2499		2500-9999				10,000 and over						
	Hand No.	Washboard %	Machine No.	Hand vacuum %	Hand No.	Washboard %	Machine No.	Hand vacuum No.	Hand No.	Washboard No.	Machine No.	Hand vacuum No.	Hand No.	Washboard No.	Machine No.	Hand vacuum No.	Hand No.	Washboard No.	Machine No.	Hand vacuum No.	Hand No.	Washboard No.	Machine No.	Hand vacuum No.					
Table linens	10	5.0	3	1.5	184	92.0	3	1.5	1	1	71	1	1		27		3		1		34		3		5	1	49	2	
Bed linens	2	1.0	2	1.5	183	96.8	2	1.0			71	1	1		27						33		3		1	2	49	1	
Tea towels	2	1.0	4	2.1	181	95.7	2	1.0		1	69	1	1		27					1	33		3		1	2	49	1	
Towels, hand	3	1.5	4	2.0	182	95.2	2	1.0		1	69	1	1		28		1		1		33		3		1	2	49	1	
Towels, bath	3	1.5	2	1.0	185	96.3	2	1.0			72	1	1		27		1				33		3		1	2	50	1	
Cotton underwear	13	6.5	2	1.0	181	91.4	2	1.0	1	1	71	1	1		25		2				33		3		9	1	49	1	
Rayon underwear	160	72.7	0	0.0	56	25.4	4	1.8	61		18	2	18		9		27		1	4				50		20	1		
White clothes	9	4.6	3	1.5	179	92.7	2	1.0		1	67	1	1		27						32		3		8	2	50	1	
Colored prints																													
and gingham	62	26.9	3	1.3	164	71.3	1	0.4	25	1	69		6		25		13				24		3		1	15	2	45	1
Overalls	4	2.3	2	1.1	163	95.3	2	1.1			70	1	1		25						26		3		3	2	39	1	
Socks, cotton	40	19.4	1	0.4	163	79.1	2	0.9	8		69	1	3		24		9				26		3		20	1	41	1	
Hose	177	82.3	1	0.4	34	15.8	3	1.3	61	1	24	1	25		2		31		1	4				56		5	1		
Woolens	148	72.1	2	0.9	50	24.3	3	1.4	52	2	27	1	24		4		29		1	3				40		15	1		
Corsets	72	42.6	1	0.5	94	55.6	1	0.5	28		36	1	7		17		9				17		2		27	1	22		

and for less wear on the fabrics of which the garments are made. Although the hand vacuum seems easy on clothes, being one of the least violent means of agitation, it is little used by the group, possibly because it is not thought necessary to use it to supplement a washing machine. It could, however, be used successfully for that part of the washing indicated as usually done by hand, viz., rayons, new prints and gingham, socks, hose, woolens and corsets.

Soaking of Clothes

It is seen from Table 6 that soaking of clothes was not carried on extensively. The highest percentage is 47.5 for tea towels, then hand towels at 39.5 percent, white clothes, 35 percent, underwear, 34 percent, and table linens, 33.5 percent. Most of the soaking consisted of merely wetting in cold water except for tea towels and hand towels. Longer soaking for these may have been done with the idea that it would loosen the soil better.

Length of Time of Sudsing

The length of time different classes of laundry were washed is shown in Table 7. Table linens were washed 10 minutes by 39 percent of the 200 women, with the greater part of the remainder washing them a shorter time. The same length of time is seen to hold for bed linens with 42.5 percent washing them 10 minutes, and the greater part of the remainder a shorter time.

Table 6. Extent to which clothes are soaked or merely wet before washing as reported by 200 women living in rural and urban sections of Kansas.

Classes	Population groups																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	Total										Rural																		Urban																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
											Country						Village under 325						325-2499						2500-9999						10,000 & over																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
	Merely		5		15		30		over		Merely		5		15		soaked		Merely		5		15		30		over		Merely		5		15		30		over		Merely		5		15		30		over																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	wet in	cold water	No.	%	No.	%	No.	%	No.	%	wet in	cold water	No.	%	No.	%	night:	cold water	wet in	cold water	No.	%	No.	%	night:	cold water	wet in	cold water	No.	%	No.	%	night:	cold water	wet in	cold water	No.	%	No.	%	night:	cold water	wet in	cold water	No.	%	No.	%	night:	cold water																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Table linens	35	17.5	14	7.0	6	3.0	4	2.0	8	4.0	8	6	1	1	1	1	15	5	1	5	1	1	1	3	1	1	6	1	4	1	4	1	6	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	1	4	1	5	2	3	

Table 7. Length of time for washing different classes of laundry by these women reporting each class from rural and urban sections of Kansas.

Classes	Population groups																																										
	Total											Rural										Urban																					
	Total											Country					Village under 325					325-2499					2500-9999					10,000 & over											
	Merely soaked in soap suds		Time of washing in minutes		Merely soaked in soap suds		Time of washing in minutes		Merely soaked in soap suds		Time of washing in minutes		Merely soaked in soap suds		Time of washing in minutes		Merely soaked in soap suds		Time of washing in minutes		Merely soaked in soap suds		Time of washing in minutes		Merely soaked in soap suds		Time of washing in minutes		Merely soaked in soap suds		Time of washing in minutes												
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%									
Table linens			33	16.5	54	27.0	78	39.0	24	12.0	3	1.5			21	22	26	3			2	7	15	4			4	8	15	7	1			3			6	17	19	10	2		
Bed linens			17	8.5	51	25.5	85	42.5	27	13.5	5	2.5			10	22	36	2			2	6	13	7			3	5	17	6	2			3			2	18	16	12	3		
Tea towels	1	.5	4	2.0	28	14.0	80	40.0	50	25.0	7	3.5				15	35	17	3	1	1	4	8	14	1			5	11	15	2			2	1		3	4	24	3	1		
Towels, hand	1	.5	5	2.5	25	12.5	80	40.0	51	25.5	7	3.5			1	14	33	18	3	1	2	3	8	14	1			2	14	15	2			2	1		2	6	23	3	1		
Towels, bath	2	1.0	10	5.0	36	18.0	85	42.5	49	24.5	12	6.0			6	16	35	14	2	1	1	5	10	9				5	17	12	2			3		1	3	10	20	14	8		
Underwear	3	1.5	13	6.5	37	18.5	78	39.0	47	23.5	20	10.0			4	15	33	15	3	2	2	2	11	9	1		1	3	14	12	2			2	1		1	6	17	18	10	2	
White clothing	1	.5	11	5.5	47	23.5	81	40.5	37	18.5	5	2.5			5	19	33	10	1	1	1	5	13	7			1	5	14	9	2			3			4	18	18	11	2		
Colored prints & gingham	2	1.0	29	14.5	64	32.0	65	32.5	24	12.0	1	.5	1		15	22	30	3			2	8	11	5			5	14	6	5				1	1	1		1	7	19	17	10	1
Overalls			4	2.0	12	6.0	48	24.0	74	37.0	30	15.0			1	5	22	33	10			1	1	4	12	6			3	7	16	1					2	3	15	10	13		
Socks	5	2.5	15	7.5	39	19.5	68	34.0	47	23.5	9	4.5			3	17	31	19	4			4	2	6	11	3			4	12	6				5		6	16	18	9	2		
Hose	40	20.0	39	19.5	21	10.5	22	11.0	7	3.5			17		13	7	11	2		6	4	4	1	1			3	8	3	2	1				14		13	7	8	3			
Rayons	43	21.5	52	26.0	24	12.0	13	6.5	2	1.0			19		22	8	2	1		6	5	6					2	10	3	2				1		16		14	7	9	1		
Woolens	39	19.5	33	16.5	24	12.0	13	6.5	4	2.0			16		20	9	4	1		5	4	4	1				2	6	2	3	1				16		16		3	8	5	2	
Corsets	19	9.5	25	12.5	28	14.0	31	15.5	9	4.5			7		14	13	9	2		2	1	2	4	3				4	3	8	1				10		6	9	10	3			

Table 8. The extent to which clothes were boiled for five, eight and 15 minutes by selected women living in rural and urban areas of Kansas.

Classes	Total																		Rural						Urban								
							Country						: Village under 325			325-2499			: 2500-9999			: 10,000 & over											
	No. of minutes boiled						No. of minutes boiled						No. of minutes boiled			No. of minutes boiled			No. of minutes boiled			No. of minutes boiled											
	5		8		15		5		8		15		5		8		15		5		8		15		5		8		15				
	No.	%	No.	%	No.	%	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.				
Table linens	1	.5	2	1.0	1	.5		2		1																		1					
Bed linens	1	.5	1	.5				1																				1					
Tea towels	14	7.0	4	2.0	6	3.0	4	2	3		3		3		4									3		2							
Towels, hand	9	4.5	5	2.5	5	2.5	4	3	2		1		3		1	2								3									
Towels, bath	3	1.5	3	1.5	3	1.5		3	1		1		1											2				1					
Cotton underwear	3	1.5	1	.5	2	1.0				1			1		1	1								2									
White clothes	5	2.5	1	.5	1	.5	2			1		1				1								2									

Forty percent washed tea towels 10 minutes and 25 percent washed them 15 minutes. Hand and bath towels show about the same percentages as tea towels. Underwear and white clothing were washed 10 minutes by 39 and 40.5 percent of those reporting, respectively. Approximately 20 percent washed these classes of clothing five minutes and the same percentage washed them 15 minutes.

Colored prints were washed five minutes by 32 percent of those reporting and 10 minutes by the 32.5 percent. For overalls the trend was toward a longer time of washing, 37 percent reporting 15 minutes. Thirty-four percent of the women washed socks 10 minutes; 19.5 percent washed hose three minutes and 20 percent merely soaked them in soap suds. The washing practices reported most frequently for the remainder of the classifications were: a three minute wash for rayons, reported by 26 percent; merely soaking in soap suds for woolens by 19.5 percent; and a five minute wash for corsets by 14 percent.

Boiling of Clothes

The number of women who boiled different classes of laundry is comparatively small (Table 8) and the practice seems to be followed more by rural than by urban women. Tea towels, hand towels, and bath towels were most often boiled by 12.0, 9.5 and 4.5 percent of the women, respectively. The other articles that were boiled at any time were table linens, bed linens, cotton underwear and white clothes. Of those in the rural group who boiled clothes, four stated that they boiled tea towels occasionally and one stated that she boiled hand towels occasionally.

Temperature of Water for Sudsing and Rinsing

The temperature considered satisfactory for washing is indicated in Table 9. One hundred forty-eight women or 74 percent checked hot water as the temperature for the white cottons and linens; 78 of this number were rural and 72 urban women. Of the 21.5 percent who checked 212°F. or boiling as the temperature for this class, 20 were rural and 23 urban. One urban woman said she used two suds waters for washing clothes; the first one was warm and the second one hot.

For colored clothes the number was practically the same for rural as for urban women. Fifty-seven of each group used warm water and 42 rural and 40 urban women used hot water. Several stated, however, that they started with hot or boiling water for the white clothes and used it after it had cooled for colored clothes. Rayons and silks were washed in warm water by 96 percent of the women. Only three women or 1.5 percent used hot water for these. Woolens were washed in warm water by 87.5 percent of the women and in cold water by three percent of them.

For the first rinse, 62.5 percent of the women used warm, 15.5 percent cold, and 15 percent hot water. Only 93 percent checked a first rinse; the other seven percent apparently not conscious of different rinses omitted that part of the question. The second rinse was reported as cold by 39.5 percent and warm by 46.5 percent, making a total of 86 percent. The third rinse was equally divided between cold and warm (8.5 percent) making a total of 17 percent. Thirty-four checked the temperature for a third rinse

Table 9. Temperature considered satisfactory for washing by the 200 Kansas women living in rural and urban areas.

Classes	Population groups																															
	Total								Rural																Urban							
									Country				Village under 325				325-2499				2500-9999				10,000 & over							
	Temperature of water								Temperature of water								Temperature of water				Temperature of water				Temperature of water				Temperature of water			
	Cold	Warm	Hot	212°F.	Cold	Warm	Hot	212°F.	Cold	Warm	Hot	212°F.	Cold	Warm	Hot	212°F.	Cold	Warm	Hot	212°F.	Cold	Warm	Hot	212°F.	Cold	Warm	Hot	212°F.				
No.	%	No.	%	No.	%	No.	%	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.					
(a) Suds																																
White (cottons, linens, etc.)	0	0.0	8	4.0	148	74.0	43	21.5		4	51	19			27	1		2	28	7		2	1		2	42	15					
Colored (cottons, linens)	0	0.0	114	57.0	82	41.0	0	0.0		40	31			17	11			21	14			3			33	26						
Rayons & silks	2	1.0	192	96.0	3	1.5	0	0.0	2	67				27	1			33	2			4			61							
Woolens	6	3.0	175	87.5	0	0.0	0	0.0	2	68			2	26			1	32				4			1	45						
(b) Rinse water																																
First rinse	31	15.5	125	62.5	30	15.0	0	0.0	13	38	16		6	18			7	22	1		3	1			5	44	12					
Second rinse	79	39.5	93	46.5	0	0.0	0	0.0	29	28			12	9			18	12				4			20	40						
Third rinse	17	8.5	17	8.5	0	0.0	0	0.0	3	5			1	1							1	1			12	10						
More rinses	0	0.0	0	0.0	0	0.0	0	0.0	0	0			0	0			0	0			0	0			0	0						

Table 10. Practices of drying clothes after washing as checked by the 200 Kansas women living in rural and urban areas.

Classes		Population groups																	
		Total						Rural						Urban					
								Country			Village			under 325			325-2499		
		Always		Some-times		Never		Always		Some-times		Never		Always		Some-times		Never	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
White clothes	Indoor	0	0.0	69	34.5	5	2.5			26				6	1	6	11		
	Outdoor	110	55.0	69	34.5	0	0.0	42		26			26	4		14	8	2	
Colored clothes	Indoor	15	7.5	92	46.0	0	0.0	2		34			3	7		7	15	1	
	Outdoor	71	35.5	87	43.5	0	0.0	27		35			17	4		11	13	1	
Rayons	Indoor	41	20.5	102	51.0	0	0.0	8		42			5	12		11	13	2	
	Outdoor	31	15.5	90	45.0	2	1.0	8		39	2		8	7		8	15		
Woolens	Indoor	46	23.0	78	39.0	0	0.0	12		34			6	11		12	10	1	
	Outdoor	34	17.0	77	38.5	2	1.0	10		34	2		6	6	1	6	11	1	

but only 25 said that they rinsed three times (Table 4). One rural woman stated that she used one warm suds, then a hot clear machine tub of water for white and colored clothes and then two rinses. This was counted as three rinses, the first of which was hot. Another said she used warm water to rinse woolens and cold for the rest of the clothes. One stated she rinsed in warm water in winter and cold in the summer.

Drying of Clothes

Fifty-five percent of the women always dried white clothes outdoors, 34.5 percent sometimes indoors, and 2.5 percent never dried them indoors (Table 10). Colored clothes were checked as always dried indoors by 7.5 percent, always outdoors by 35.5 percent and sometimes indoors by 46 percent of the women. Rayons were always dried indoors by 20.5 percent of the women, always outdoors by 15.5 percent, sometimes indoors by 51 percent. Woolens were always dried indoors by 23 percent, always outdoors by 17 percent and sometimes indoors by 39 percent. Some of the additional remarks made by the women checking this question help to clarify their practices. Three of the rural women said that they always dried white and colored clothes outdoors, according to the weather; two reported that they always dried all clothes outdoors when the weather permitted; some said they simply did not wash when the weather was too bad to hang the clothes outside. One dried colored clothes outdoors unless the temperature was down to freezing; two dried woolens outdoors when the weather was warm; one urban woman stated that she dried rayons and colored clothes

outdoors in the shade; one said she dried all clothes outdoors in summer and sometimes indoors in winter; and four said they dried white and colored clothes outdoors, if possible.

Soaps Used

The soaps used for regular laundry and for fine things, those on hand, and those preferred are shown in Table 11. Oxydol heads the list for regular washing. It was named 56 times, P and G 38 times, Rinso 31 times and homemade soap 27 times. Altogether 21 different brands were named. Oxydol was named by rural women 25 times and by urban 31 times, P and G 22 times by rural women as against 16 times by urban women. Rinso was divided almost equally between rural and urban and homemade was used more than twice as often in the country as in urban districts. This is to be expected because rural women are more likely to have the fat on hand to use for soap making.

Eighteen different brands of soap were named as used for fine things. Lux, listed 100 times, and Ivory, 80 times, lead the list. The next two competitors were each named only 11 times. Lux was used almost equally by rural and urban women and Ivory was named 30 times by rural women and 50 times by urban women.

Thirty different brands of soap were named as on hand. The seven leading brands and the number of times listed are: Ivory 67, P and G 54, Oxydol 53, Duz 42, Lux 35, Rinso 34, and homemade 32. Ivory was named by the urban women more than two times as often as by the rural women. It included all types of Ivory, such as, bar, flake and snow. P and G was named 32 times by

Table 11. Soaps used for regular washing and for fine things; soaps on hand and those preferred by the 200 selected Kansas women living in rural and urban areas.

[illegible]

Table 11 (concl.).

Kinds of soap	Soap for regular washing					Total	Soap for fine washing					Total	Soaps on hand					Total	Soaps preferred					Total
	Population groups						Population groups						Population groups						Population groups					
	Rural		Urban				Rural		Urban				Rural		Urban				Rural		Urban			
	Country	Village	325- under 325	2500- 2499	10,000 9999 & over		Country	Village	325- under 325	2500- 2499	10,000 9999 & over		Country	Village	325- under 325	2500- 2499	10,000 9999 & over		Country	Village	325- under 325	2500- 2499	10,000 9999 & over	
	No.	No.	No.	No.	No.		No.	No.	No.	No.		No.	No.	No.	No.		No.	No.	No.	No.	No.			
I.G.A.																								
Lux						39	19	14	2	26	100	8	5	6	1	15	35	2	1		4	9	16	
Magic Washer	1			1		2	1				1	4	2	2			8	3					4	
Marvene								1	2		3	1					1			1				
Misti Flakes														1			1							
Nola		1				1			5		5		2	3		1	6		1				1	
Oxydol	19	6	8	1	22	56	5				5	19	4	7		23	53	11	5	6		13	5	
Red and White							1				1													
Rinso	10	6	4		11	31	2			4	6	11	3	7		13	34	9		3		10	22	
Snow White																								
Sudsy														1			1		2				2	
Super Suds	4	2			1	7	1	1	2		4	6	4			2	12	5	1	2		2	10	
Sutho Suds												1					1							
White King					2	2	1				1	1				2	3			1		2	3	
White Sail	1				3	4	2				2	2		1		2	5						1	
Vel							3	4	1	1	11	1	4	3	1	2	11	1	3	1		1	6	
Bar, flake & granule																								
Ivory		1			5	6	19	11	16	2	32	80	10	10	14	2	31	67	4	6	4	1	15	30

rural women and 22 times by urban women; Oxydol, 23 times by rural and 30 times by urban women; Duz, 14 times by rural and 28 times by urban women; Lux, 13 times by rural and 22 times by urban women; Rinso, 14 times by rural and 20 times by urban, and homemade, 22 times by rural and 10 times by urban women. Other brands were less frequently used.

Twenty-one different brands of soap were named as preferred. Some women mentioned more than one; e.g., one for regular laundry and one for fine laundry, and some mentioned even more. First choices were not asked for as such, so all of those mentioned were counted preferences. Some brands named, rank in the following order according to the number of times mentioned: P and G 44, Ivory 30, Rinso 22, Dreft 19, Lux 16, Blue Barrel 15, homemade and Duz each 14 times.

Form of Soaps Used

Table 12 gives the number of times each form of soap was used by the 200 Kansas women; the indicated percentage is of the total number of times checked (338). Brown soap was checked only 1.7 percent of the times. Homemade soap was counted as white bar. White bar was checked 20.7 percent of the time by rural women and 14.8 percent by urban women, making a total 37.2 percent using this form. Flake, representing 19.5 percent, and chips, 4.1 percent, might well be classed together since certain soaps were called flake by one person and chips by another. The next three forms, powder, 21.8 percent, grains, 15.3 and beads, 1.4 percent, were dealt with in the same fashion by those who

checked them and perhaps should have been classed as one group. One rural woman remarked that she put her homemade soap through the food grinder. If similar groups were combined, the totals for different forms would be granular, 38.5 percent, bar, 37.2 percent and flake, 23.6 percent. The trend toward the use of finely divided soaps is apparent from reports on what was being used. However, if people were always able to purchase the soaps listed as preferred there might be more bar soap used because some of those soaps were indicated as being desired.

Reasons for Preferences

An attempt was made to learn, if possible, why preferences for certain soaps exist. Reasons for recent changes in the use of soap were listed and the person asked to check those which were applicable to her. Altogether these reasons for change to another soap were checked 153 times. Choice not available was checked 65 times, more efficient, 17 times, easier on clothes, 16 times, suds well in hard water, 15 times, easier on hands, 12 times, easier to use, 8 times, and more pleasing fragrance, 6 times. The remaining reasons were listed one to three times each. It is interesting to note that only one checked advertiser's claims as her reason for changing; whereas, most of the reasons given, except the first, might be advertiser's claims. The reasons for changing recently which were written in were: keeps suds longer, like to try different soaps, soaks out dirt, experimenting for hard water, I have fat for homemade and does not make one sneeze.

Table 12. Forms of soaps used by 200 rural and urban Kansas women showing the number of times each form was checked and its percentage of the total.

Form of soap	Population groups											
	Total		Rural						Urban			
			Country		Village		325-2499		2500-9999		10,000 & over	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Bar Brown	6	1.7	1	0.2	0	0.0	1	0.2	0	0.0	4	1.1
Bar White	121	35.5	47	13.9	23	6.8	24	7.0	3	0.8	24	7.0
Flake	66	19.5	20	5.9	8	2.3	15	4.4	1	0.2	22	6.2
Chips	14	4.1	9	2.6	1	0.2	1	0.2	1	0.2	2	0.5
Powder	74	21.8	20	5.9	16	4.7	8	2.3	2	0.5	28	8.2
Grains	52	15.3	16	4.7	8	2.3	10	2.9	1	0.2	17	5.0
Beads	5	1.4	3	0.8	0	0.0	0	0.0	0	0.0	2	0.5

If persons have changed for these reasons it might be inferred that on the whole they use what they do for these same reasons except as it is not available at the present time. However, since a relatively small percentage checked these reasons or wrote in any other reason, they either have not changed or are satisfied with their choices.

Comparison of Findings with Other Studies

A question was included in the check list pertaining to the amount of soap used per family per month. Many of the women said that they had no idea how much they used. Since they had not kept records on this and since there was not ready access to their expenditures, the findings were not considered to be of value in this discussion. In contrast to this, the Nutritional Council in Chicago had asked the families participating in that study to keep accurate records of the amount of soaps used for a definite period of time. The survey made by the "Michigan Farmer" showed a preference for Fels Naphtha and P and G in bar form and for Oxydol and Rinso in flake form.

The selected Kansas women used Oxydol, P and G and Rinso most often for regular washing and Lux and Ivory for fine clothes. They listed as preferred P and G and Ivory.

The "Michigan Farmer" (7) report showed that the preference for bar soap was greater than for flake or granular. Finely divided soaps were used more by the Kansas women. This preference for granular forms was similar to that found in 1940 in the city

of Milwaukee (8). In the city, Lux and Rinso were the most often used of the flake and granular type, respectively.

It is interesting to note the similarity in the brands used in Kansas and in Milwaukee and surrounding territory; also that soaps were used to a greater extent than the newer hardwater detergents such as Dreft and Vel which have come into the market more recently. Of course, some of these are not available at the present time.

SUMMARY

1. A study was made to ascertain the preferences of 200 Kansas women for detergents used in the home laundry, to learn if possible why these preferences existed and to find out some of the practices used in home laundering. One hundred rural and 100 urban women were queried.

2. Altogether 666 persons were represented, 245 of whom were gainfully employed outside the home. Farmers composed the largest occupational group represented or 32 percent; the next largest was professional or 19 percent.

3. About 92 percent of the women did all and 8.5 percent did part of their laundry at home. Washing machines were used by 92 percent of the women. All but three were of the roller wringer type.

4. City water was used for washing clothes by 45.5 percent of the women. Water was piped into the house in 57 percent of the rural homes and in 90 percent of the urban homes. Altogether 73.5 percent of the homes had water piped into the house. Approximately 52 percent of the women reported that they used soft water for washing; 25 percent checked medium soft for this purpose.

5. Thirty-nine percent of the women used water softener regularly or occasionally. Approximately one-half of those using softeners, skimmed the precipitate from the water. A bleach was used regularly or occasionally by one-third more rural women than urban women.

6. Two rinse waters were checked by 80 percent of those reporting. Rural and urban women were about equally divided. More rural women rinsed only once than did urban women; fewer rural women rinsed three times than did urban women. However, a few more rural than urban women claimed that they changed their rinse water either occasionally or regularly during the washing process.

7. The different classes of laundry such as table linens or hand towels were not all reported as being sudsed by all of the women and some reported more than one way of washing a class of clothing. The percentages were determined from the total number of times each class of laundry was handled. Machine percentages ranged from 96 to 91 percent on bed linens, bath towels, tea towels, overalls, hand towels, white clothes, table linens and cotton underwear. Colored prints and gingham were reported as washed by the machine 71 percent of the time and by hand 26.9 percent. Rayons were washed by machine 25 percent of the time and by hand 72 percent of the total number of times. Hosiery and woolens were washed by hand 82 and 72 percent of the time, respectively.

8. Soaking of clothes was not carried on extensively. Most of those that were soaked were merely wet in cold water. Those soaked longer and most often were tea towels and hand towels, 47 and 39 percent, respectively.

9. Table linens, bed linens, underwear and white clothing were almost always washed 10 minutes or less. Tea towels and hand towels were washed longer; likewise overalls were washed 15

minutes or longer a majority of the times reported.

10. The boiling of clothes was not generally practiced. Tea towels, hand towels and bath towels were boiled by 12.0, 9.5, and 4.5 percent of the women, respectively.

11. Hot water was checked as the temperature for washing white cottons and linens by 74 percent of the women. Boiling water was indicated by 21 percent of the women. For colored clothes 57 percent used warm water and 41 percent used hot water. Rayons and woolens were washed in warm water by 96 and 86 percent of the women, respectively.

12. For the first rinse water 62 percent of the women used warm, 15.5 percent cold, and 15 percent hot water. For the second rinse 39.5 percent reported cold water and 46.5 percent warm. The third rinse was checked by 8.5 percent each for cold and warm water.

13. Most of the clothing was dried outdoors most of the time. Rayons and woolens were always dried indoors by about 20 percent and sometimes indoors by about 50 and 40 percent of the women, respectively. The remainder dried these garments outdoors.

14. Of the soaps used for the regular washing Oxydol was listed 56 times and P and G 38 times. Altogether 21 different brands were named. Eighteen different brands were named as used for fine things. Lux, named 100 times and Ivory, 80 times, headed the list. Thirty different brands were reported to be on hand. Of these Ivory was reported 67 times, P and G 54 and

Oxydol 53. Twenty-one different brands were named as preferred if they were always available. The first three were P and G named 44 times, Ivory, 30, and Rinso, 22.

15. The form of the soap actually used was as follows: granular forms 38 percent, bar 37 percent and flake 23 percent.

16. The attempt to ascertain why women had changed recently from one soap to another was unsuccessful.

ACKNOWLEDGMENT

Appreciation is expressed to Professor Alpha Latzke, Head of the Department of Clothing and Textiles, for her time and effort in directing this study; and to certain members of the Kansas State College Extension Division for help in making contacts with rural women.

REFERENCES

- (1) Blue Book: an annual buyers guide, directory and reference volume for manufacturers and distributors of soaps,... New York. MacNair-Dorland Co. 234 p. 1945.
- (2) Hoyt, Elizabeth Ellis.
Consumption in our society. New York. McGraw-Hill. 420 p. 1938.
- (3) McGowan, Ellen Beers.
A comparative study of detergents...New York. Contributions to education, No. 441, Bureau of Publications, Teachers College, Columbia University. 123 p. 1930.
- (4) McLaughlin, Laura.
Consumption of soap in Chicago homes. Jour. Home Econ. 28:386-7. 1936.
- (5) Schwarcz, Leonard.
Sanitary products, their manufacture, testing and use. New York. MacNair-Dorland. 288 p. 1943.
- (6) Scientific American.
Hard water products by addition of new ingredient. Sci. Amer. 171:117. 1944.
- (7) Soap and Sanitary Chemicals.
What soap on farms? Soap and Sanit. Chem. 15:29. 1939.
- (8) Soap and Sanitary Chemicals.
Soap buying habits. Soap and Sanit. Chem. 16:29-31. 1940.
- (9) Steckel, Frieda M.
The effect of certain common detergents used in the home laundry upon selected cotton fabrics. Unpublished thesis. K.S.C. 68 p. 1941.
- (10) Wigner, J. H.
Soap manufacture, the chemical processes. New York. Chemical Publishing Co. Inc. 161 p. 1940.

APPENDIX

FORM I

Home Laundering Practices

A study is being undertaken at Kansas State College which has to do with the service qualities of certain garments and materials laundered under home conditions. Contributory to this study we are attempting to find out the kind of soap used and laundry practices followed in Kansas homes.

We are interested in your practices, or what you actually do, and will appreciate your keeping that in mind as you check the list below.

1. Indicate the number of persons in your family whose ages fall within the limits given below:

Infant to 6 years _____	Thirteen to 17 years _____
Seven to 12 years _____	Eighteen or older _____

2. Indicate the type of work engaged in by those members of your family who are gainfully employed. (For example: Farmer, mechanic, office worker, professional, etc.)

3. Check the type of community in which you live.

Rural _____	City 2500 to 10,000 _____
Village to 250 population _____	City 10,000 and over _____
Town 250 to 2500 population _____	

4. Do you use city water? Yes _____ No _____

5. Do you have water piped into the house? Yes _____ No _____

Carried into the house? Yes _____ No _____

6. Do you have a water softening system? Yes _____ No _____

7. Indicate to what extent laundry is generally done in your home:

All _____ Part _____ None _____

(a) If laundering is done in the home, check the means used to handle the following classes of articles:

				:Vacuum	
	:Hand:	Washboard:	Machine:	hand washer:	Other
Table linens	:	:	:	:	:
Bed linens	:	:	:	:	:
Tea towels	:	:	:	:	:
Towels, hand	:	:	:	:	:
Towels, bath	:	:	:	:	:
Cotton underwear	:	:	:	:	:
Rayon underwear	:	:	:	:	:
White clothes	:	:	:	:	:
Colored prints & gingham	:	:	:	:	:
Overalls	:	:	:	:	:
Socks, cotton	:	:	:	:	:
Hose	:	:	:	:	:
Woolens	:	:	:	:	:
Corsets	:	:	:	:	:

8. Check the word which best describes the water you use:

Soft _____ Medium _____ Hard _____

9. Do you use water softener? Yes _____ No _____

(a) If so, name kind used: _____
(Examples: Climalene, lye, etc.)

(b) If you use a water softener, do you (1) strain the softened water _____ (2) skim it _____ (3) pour off the water before using? _____

10. If you wet your clothes or soak them before washing, check for how long in the table below:

	Merely wet				
	in cold water:	Five:	Fifteen:	Thirty:	Over night
	:	minutes	:	:	:
Table linens	:	:	:	:	:
Bed linens	:	:	:	:	:
Tea towels	:	:	:	:	:
Towels, hand	:	:	:	:	:
Towels, bath	:	:	:	:	:
Underwear	:	:	:	:	:
White clothing	:	:	:	:	:
Colored prints & gingham	:	:	:	:	:
Overalls	:	:	:	:	:
Socks	:	:	:	:	:
Hose	:	:	:	:	:
Rayons	:	:	:	:	:
Woolens	:	:	:	:	:

11. Check how long you wash different classes of laundry:

	:Merely soaked:	Time of washing in minutes				
	:in soap suds :	Three:	Five:	Ten :	Fifteen:	20 to 30
Table linens	:	:	:	:	:	:
Bed linens	:	:	:	:	:	:
Tea towels	:	:	:	:	:	:
Towels, hand	:	:	:	:	:	:
Towels, bath	:	:	:	:	:	:
Underwear	:	:	:	:	:	:
White clothing	:	:	:	:	:	:
Colored prints & gingham	:	:	:	:	:	:
Overalls	:	:	:	:	:	:
Socks	:	:	:	:	:	:
Hose	:	:	:	:	:	:
Rayons	:	:	:	:	:	:
Woolens	:	:	:	:	:	:
Corsets	:	:	:	:	:	:

12. Do you use a bleach? Yes _____ No _____

(a) If so, what kind? Name _____

13. If you boil your clothes, check how long for each class:

	: Do not:	Number of minutes boiled			
	: boil :	Five	: Eight	: Fifteen	: Other
Table linens	:	:	:	:	:
Bed linens	:	:	:	:	:
Tea towels	:	:	:	:	:
Towels, hand	:	:	:	:	:
Towels, bath	:	:	:	:	:
Cotton underwear	:	:	:	:	:
Rayon underwear	:	:	:	:	:
White clothes	:	:	:	:	:
Colored prints & gingham	:	:	:	:	:
Overalls	:	:	:	:	:
Socks	:	:	:	:	:
Hose	:	:	:	:	:
Rayons	:	:	:	:	:
Woolens	:	:	:	:	:
Corsets	:	:	:	:	:

14. Check the method of wringing: Wring by hand _____ Roller
wringer _____ Spinner _____

15. Indicate the number of times you rinse your clothes: _____

16. Do you change rinse water during the washing process?

Yes _____ No _____

17. Indicate below the temperature you consider satisfactory for the suds or wash water:

:Cold : Warm : Hot : Boiling (212° F.)

White (cottons,linens,etc.): : : :

Colored (cottons,linens) : : : :

Rayons & silks : : : :

Woolens : : : :

18. Check the temperature of water used for rinsing:

: Cold : Warm : Hot

First rinse : : :

Second rinse : : :

Third rinse : : :

More rinses : : :

19. Indicate the word or words which best describe your practices in drying the laundry:

: Always : Sometimes : Never

White clothes : Indoor : : :

: Outdoor : : :

Colored clothes : Indoor : : :

: Outdoor : : :

Rayons : Indoor : : :

: Outdoor : : :

Woolens : Indoor : : :

: Outdoor : : :

20. Do you use the same kind of soap in washing all of your clothes?

Yes _____ No _____

(a) Do you change the soap suds during washing?

Yes _____ No _____

21. What soap do you use for:

Regular washing _____ Fine things _____

22. Check the uses, other than regular laundry, for which you use laundry soap:

Dishes _____ Bath _____

Woodwork _____ Painted walls _____

Floors _____ Others _____

23. Check below the words which describe the soap you use for the laundry:

Bar brown _____

white _____

Grains _____

Flake _____

Beads _____

Chips _____

Liquid _____

Powder _____

Jelly _____

24. Name the kinds of laundry soap which you have on hand now:

25. What brand of laundry soap did you buy last?

Name _____

(a) In what form was it? (Bar, flake, granule, liquid,
jelly) _____

26. What brands of soap have you previously used for your laundry?

27. What brands would you prefer if it were always available?

(a) What form? _____

28. Approximately how much soap do you use per month?

Number of bars _____

Number of boxes:

Large size _____

Small size _____

29. If you have changed recently to another brand or kind, check your reason:

Choice not available _____

New costs less _____

New costs more _____

More efficient _____

Easier to use _____

More pleasing _____

fragrance _____

Sudses well in hard _____

water _____

Easier on clothes _____

Easier on hands _____

Advertisers' claims _____

Advice of a friend _____

Other reasons _____

30. Do you make up liquid soap or jellies? Yes _____ No _____